

## Sharp as a Fox: Are foxnews.com visitors less politically knowledgeable?

### Abstract

In 2012, survey research was publicized suggesting that Fox News viewers were not only less informed than consumers of other news media but also less informed than people abstaining from news media entirely. Many have taken this to be unequivocally true and the study remains popular among political discussants to this day. However, virtually all of the investigations used to advance the argument focus on current-events type knowledge and neglect important controls that could influence both political knowledge and Fox News consumption. Furthermore, no research to date has investigated any effects stemming from consuming the network's online content (i.e, that from foxnews.com). This paper aims to contribute these gaps. Using the 2016 American National Election Survey (ANES), I investigate whether consuming content from foxnews.com is associated with decreased political knowledge. I find no differences in knowledge concerning how the US political system works (what I call process-related knowledge) but do find a significant, negative relationship between visiting foxnews.com and facts about society writ large (what I call society-oriented knowledge). These effects persist even when controlling for party, ideology, and conservative-group affinity and in the preponderance of matching procedures employed to reduce concerns of self-selection. Implications and avenues of future research are also discussed.

## Introduction

In 2012, researchers at Farleigh Dickinson University shocked the political world with a startling claim about watching the Fox News Network and political knowledge. Not only did viewers of America's most mainstream conservative cable news network know less about politics than those watching other news channels, they purportedly knew less than people who did not watch the news at all (Cassino, Woolley, and Jenkins, 2012). It reinforced a smaller study fielded by the same researchers in 2011 finding that Fox News viewers in New Jersey were less likely to know about the ousting of Hosni Mubarak in Egypt than those New Jerseyans who avoided cable news (Cassino and Woolley, 2011). These findings went viral and were later reinforced in a paper by economic historian and former official in the Bush and Reagan administrations Bruce Bartlett. Bartlett (2015) analyzed prior public opinion polling to claim "a number of surveys have found Fox views [sic] to be less well informed and more likely to have factually untrue beliefs than those who receive their news from mainstream sources" (p. 12) further arguing that this contributes to conservatives' "self-brainwashing" (p. 21). Consequently, among many (especially liberal) discussants, the notion that Fox viewers are politically ignorant has been increasingly seen as unimpeachably true. It is commonly invoked during on and off-line political conversations, often in conjunction with claims that the network is acting as a propagandistic arm of the Republican party.

But closer inspection shows that this ostensibly solid fact is riddled with cracks. None of the aforementioned sources, nor those reviewed by Bartlett (2015), controlled for factors that could influence both political knowledge and cable news consumption such as age, education, or income. Additionally, the questions that constituted "knowledge" largely tended to focus around current statistics (unemployment), current events (the Keystone XL pipeline), and beliefs in conspiracy theories (President Obama being born in Kenya). While important, these do not represent all the kinds

of political knowledge out there (Delli Carpini and Keeter, 1996; Hollander, 2014; Jennings, 1996; Jerit and Barabas, 2012; Lupia, 2016). Furthermore, it is not at all clear if these results are limited to Fox’s cable programming or if it extends to their online news as well. Considering that roughly a third of Americans prefer to get their news from online sources—a number that has been steadily rising over the last decade (Mitchell, 2018)—this question is pressing as well.

This paper was inspired by these earlier results and shortcomings to investigate a pressing parallel question: the effects of visiting its online news portal, foxnews.com, on political knowledge. Using self-reported online media consumption habits and a host of knowledge-based questions in the 2016 American National Election Survey (ANES), I find that those who report visiting foxnews.com for their news are not statistically more or less likely to know things about who is currently in office, which party is more conservative than the other, who holds the majority in congress, and how long a senator’s term is. I identify this kind of knowledge as “process-oriented.” However, visiting the site *is* associated with a significant decrease in what I call “society-oriented” knowledge (e.g., if the income gap larger today than 20 years ago, if economic mobility has decreased over the last 20 years, if global warming exist, and if the nation’s economy was doing better in 2016 than in 2008). In fact, on this dimension, it appears that the effects associated with visiting foxnews.com is significantly different, and more negative, than those of the majority of other online news sites.

## **Literature Review**

Given the decades of extensive work on the topic, it seems almost a truism that news consumption increases political knowledge. As a result, most research focuses on the factors that can moderate this relationship. This includes the amount of coverage people are exposed to (Barabas and Jerit, 2009; Carpini, Keeter, and Kenamer, 1994; Hayes and Lawless, 2015; Jerit and Barabas, 2012; Nicholson, 2003), the effects of education and prior knowledge (Jerit and Barabas, 2012; Prior, 2005;

Yang , 2008), the effects of specific modes of delivering the news (Druckman, 2005; Mondak, 1995; Neuman, Just, and Crigler, 1992; Prior, 2005; Yang, 2008), and the differences seen in soft vs hard news (Baum and Jamison, 2006; Neuman, Just, and Crigler, 1992).

However, there has been very little rigorous scholarly work investigating the effects of consuming particular brands of content on political knowledge. This is surprising in general—but is especially so in the case of Fox News given the network’s dominance in the American conservative landscape and the substantial clout conservative media companies have been shown to have on their consumers. Previous research on conservative talk radio—specifically *The Rush Limbaugh Show*—illustrates that conservative hosts can exert a substantial amount of influence over low-valence political issues (Barker and Knight, 2000) and careful research exploiting the delay in network roll-out convincingly shows that Fox News itself is responsible for a roughly 0.5 point increase in Republican vote-share (DellaVigna and Kaplan, 2007; Schroeder and Stone, 2015). Indeed, previous research conducted by Schroeder and Stone (2015) used the same natural-experimental conditions to show that there were indeed areas where Fox News viewers were more (un)knowledgeable as a result of watching the network.

These findings makes it seem like the Fox News effect found by Cassino and Woolley, and Cassino, Woolley, and Jenkins is plausible. However, there is still plenty of cause for skepticism. With regards to Schroeder and Stone’s (2015) thorough investigation, while they demonstrated that Fox News causes increases and decreases in certain kinds of knowledge, their main investigatory frame was whether those increases/decreases would be seen in knowledge that was beneficial/detrimental for Republican viewers to know. (That is, whether viewers were more likely to know facts that comported to Republican arguments and less likely to know those that challenged them). While that topic is important and theoretically interesting, this project is instead focused on whether Fox News consumption (specifically consumption of its online content) is associated with increases/decreases in

knowledge helpful for navigating the political system and if it is associated with increases/decreases in knowledge that is oriented more towards society generally.

There are also other reasons why the findings may not demonstrate a true negative effect of Fox News on political knowledge. First, there are multiple definitions of knowledge deployed by political scientists but claims of a Fox News effect largely rely on only one. Second, these effects do not control for variables that are known to be important moderators of political knowledge such as sex, race, and political interest. Finally (or at least the last of those addressed here), there may be differences that emerge between online and offline news consumption.

### **Knowing What and Why?**

In the majority of studies used to assert the presence of the Fox News effect, investigators largely conceptualized knowledge as whether or not viewers were up-to-date with current events. This approach is limiting for a number of reasons. First, the kinds of events that are respondents are asked about will be driven by what the researchers deem pressing and current. This will inevitably be influenced by a combination of the researchers' own political biases and media-viewing habits. Given differences in the moral foundations, narratives, and propensities of American conservative and liberals (Haidt, 2012; Hibbing, Smith, and Alford, 2013; Lakoff, 2016; Westen, 2007), what people of one political persuasion find important enough to merit mention on a current events survey will differ from those of the countervailing group. This could bias conclusions towards making Fox News viewers appear more ignorant when, in reality, what is solely being measured is how informed viewers are of more liberal priorities.

Furthermore, these studies tend to reflect one kind of knowledge, current events. But the literature is replete with other ways to classify knowledge. Jennings (1996) considered three different kinds: Textbook facts, surveillance facts, and historical facts. In their seminal text, Delli Carpini and Keeter (1996) investigate a variety of different domains including historical facts, current events,

political processes, parties, and public affairs. Barabas et al. (2014) identify a two by two typology of knowledge based upon whether the knowledge is either static/in-flux or general/policy-specific. In any event, it is clear that there is more to political knowledge than being up-to-date on the news or in giving the appropriate answer when asked about conspiracy theories.

Another way of distinguishing different kinds of political knowledge is whether or not the knowledge is useful for being able to engage in the political process. As described in Lupia's (2016) *Uninformed*, there has long been a lot of hand-wringing about whether or not the American public has enough useful knowledge to be able to engage in the political process (p. 199-201). However, many surveys do not ask the kinds of questions that accurately ascertain this. Instead, they fall back on current events, historical facts, and, in the example Lupia specifically outlines in the book, measures of “common culture” (p. 204). While it is not strictly incorrect to classify any one of these things as “political knowledge,” using the broader term when only a specific kind of knowledge is being investigated can lead to improper generalizations. People may erroneously think that Fox News consumers are ignorant in multiple domains when the relationship has not actually been tested for said domains.

In this paper, I specify two distinct kinds of political knowledge: Process-oriented knowledge and society-oriented knowledge. The first contains items that would be more helpful for people wanting to engage with the political process, such as the length of a senator’s tenure and the party currently in control of the House and Senate. Society-oriented knowledge, in contrast, focuses on issues that are not directly involved with political processes in the U.S., although they are often the subject of those processes and the actors guiding them. This includes climate change, immigration, and the state of the economy. To be clear, in investigating these kinds of knowledge I am not repudiating conceptualizations put forward by previous scholars nor am I asserting that this distinction will be useful for every question. Indeed, I believe future work ought to look at how Fox News consumption

(online and off) affect domains of knowledge beyond the ones I test here. But given the sweeping claims of ignorance often accompanying the original Cassino and Woolley survey results, I feel it is useful to start at a more practical level: Is consumption associated with a lack in the kinds of knowledge that help people engage with the political process? Is it associated with a lack of knowledge about politically-oriented things affecting their social reality? Neither? Both? Answering these broader, more pragmatic questions first allows us to set the stage for different conceptions of knowledge down the road.

### **Moderating Effects**

In addition to only focusing on one kind of knowledge, none of the investigations into the Fox News effect spare Schroeder and Stone (2015) consider or control for the effects of other important moderating variables (e.g., things that could be correlated with both consuming Fox News content and the amount of political knowledge expressed). Delli Carpini and Keeter (1996) identify not only education but sex, race, and socioeconomic status as important correlates in the amount of political knowledge individuals have. These factors are also known to be associated with conservative group identity, which strongly predicts Fox News viewership (Mitchell, Gottfried, and Barthiel, 2017). Additionally, *ex ante* political interest has been repeatedly shown to be important in the amount of knowledge one has and in their media consumption decisions (Boulianne, 2011; Eveland and Scheufele, 2000; Galston, 2001; Lecheler and de Vreese, 2017; Stromback, Djerf-Pierre, and Shehata, 2013; Strömbäck and Shehata, 2018). However, it is also not controlled for in most investigations of Fox News effects.

### **Mode Effects: Online vs Offline**

As of now, investigations of the Fox News effect has been limited to its cable news programs. However, millions of Americans are also acquiring news from Fox's home on the web, foxnews.com. And although increased digital news consumption is also associated with increased political knowledge

(Bimber et al., 2015; Dimitrova et al., 2014), there have also been studies that demonstrate a knowledge gap in those who use online versus offline sources. The research suggests that this gap is largely driven by the same factors as the moderators above—e.g., race, sex, socioeconomic status, and *ex ante* interest in politics (Prior 2005; Wei and Hindman, 2011; Yang, 2008). Thus it is possible that foxnews.com will deliver different effects on political knowledge than the company’s cable content, as previously investigated by Schroeder and Stone (2015)<sup>1</sup>.

Additionally, the internet is increasingly becoming a staple of the American news diet. Most Americans under the age of 50 receive prefer to receive most of their news from online sources compared to cable—and the number one preference from those aged 30-49 are online news websites (Shearer 2018). Foxnews.com is among the most successful online news platforms. As of September 2019, the site was the 20<sup>th</sup> ranked news site globally and is estimated to accrue between 300-400 million unique visits per month—over 90 percent of which originate from the United States<sup>2</sup>. Recent research is beginning to suggest that there may be differences in political knowledge as a consequence of the differences stemming from how people engage with the internet versus cable news (e.g., Kleinberg and Lau 2019). This evolution in media preferences means that the question of a foxnews.com effect is pressing in and of itself given the possibility of an effect from its parent’s cable content. While this paper was certainly inspired by the work(s) of Cassino, Woolley, and Jenkins, these questions lead me to table, for now, the effects of Fox’s television content and instead focus on the effects associated with visiting its online web portal [www.foxnews.com](http://www.foxnews.com).

### **Reasons to Express “False” Things**

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- 1 To be clear, this paper is not concerned with measuring the differential effects of Fox’s online and cable programming. Considering that a substantial amount of its online content refers back to what was aired on television (or is simply re-ran through embedded video), disentangling the effects would be next to impossible without a controlled laboratory experiment. But before such investigations are undertaken, it is prudent to see if the online content is associated with knowledge effects in the first place.
  - 2 Statistics come from [www.similarweb.com/website/foxnews.com](http://www.similarweb.com/website/foxnews.com). SimilarWeb is an online market tracking company providing estimates of sites’ volume, audience composition, referrers, and other important online business metrics.



Having established the two kinds of knowledge I investigate in this project, I feel like I would be remiss in not discussing reasons why reading the content at foxnews.com may be associated with diminished knowledge. One possible argument is the one often embedded in discussions of the effect more broadly: the site is not primarily in the business of dispensing fact but in peddling propaganda on behalf of the conservative wing. The information is subsequently strongly skewed, biased, and may encourage readers to construct a vision of the world that does not comport with reality (Bartlett 2015). While the charge of propaganda is unnecessarily inflammatory, it cannot be denied that Fox News has a distinctly comfortable relationship with the U.S. right and that this may lead to bias and distortions in the information obtained by its consumers.

Another possible argument is that people will elect to provide answers that are factually incorrect in order to signal and/or reaffirm their group memberships. Leveraging the blatant falsehood of the Trump administration's proclamation that his inauguration crowd was one of the largest in history, Schhaffner and Luks (2018) showed that when Trump supporters were shown aerial images of his and President Obama's inaugurations, they tended to claim that the former's visibly more sparse crowd was larger. However, when the images were presented to Trump supporters without the political context, they tended to report that President Obama's crowd was larger. Bullock et al. (2015) showed that some respondents will express falsehoods in line with their political beliefs—a behavior that can be ameliorated by offering a small financial incentive for correct answers. Findings such as these play into the literature asserting in-group solidarity as a foremost concern among partisans (Mason, 2018). Because Fox News attracts a distinctly conservative core viewership (Mitchell, Gottfried, and Barthiel, 2017), it is possible that watching it simply acts as a noisy proxy for conservative-group affinity; higher levels of which driving increased “expressive responding” (in the words of Bullock et al. [2015]) as opposed to the network actually being responsible for deleterious effects. Of the two kinds of knowledge that I investigate, society-oriented knowledge is the most likely to be affected by expressive

reporting as perceptions of all the issues investigated (climate change, immigration, and the economy) have been routinely shown to be influenced by partisanship.

## **Hypotheses**

Given these issues and considerations, I arrive at the following 2 hypotheses, one concerned with each kind of political knowledge I investigate in this paper:

**H1: Visiting foxnews.com for news content will be negatively associated with levels of *process-oriented* knowledge compared to those who do not consume online news (H1a) and those who consume news from other online sources (H1b), all other things being equal.**

Prior work suggests that this kind of knowledge is less likely to be influenced by media effects (Delli Carpini and Keeter, 1996). However, I opt to test for effects in this manner instead of testing explicitly for null results (e.g., through equivalence tests [Harms and Lakens, 2018]) as it is more consistent with the claims of a “Fox News” effect.

**H2: Visiting foxnews.com for news content will be negatively associated with levels of *society-oriented* knowledge compared to those who do not consume online news (H2a) and those who consume news from other online sources (H2b), all other things being equal.**

As mentioned above, this kind of knowledge is most likely to be associated with an effect since societal issues are increasingly being seen through politicized lenses (e.g., Mason, 2018). For this reason, as I elaborate on in the section about my statistical controls, I include a measure for

conservative in-group sentiment to try and disentangle it from the effects of visiting foxnews.com alone.

My final hypothesis concerns whether or not the association is strongest for individuals who solely rely on foxnews.com for their online news. The claim originally levied by Cassino, Woolley, and Jenkins (2012), after all, was that those who relied on Fox **alone** were the least informed. The site's association with process and society-oriented knowledge could be moderated by how many other sites respondents report visiting.

**H3: The effects associated with visiting foxnews.com on (H3a) process-oriented knowledge as well as (H3b) society-oriented knowledge will be strongest among those who rely on the fewest news sources, all other things being equal.**

## **Data and Methods**

I leverage the 2016 ANES<sup>3</sup> to investigate my hypotheses. In addition to being replete with demographic controls and other useful moderators (e.g., political interest and conservative group affinity), it contains two particular sets of questions that make it useful for this project: First, it asks a number of questions that can be used to ascertain respondents' political knowledge; some of these questions tap into process-oriented knowledge while others tap into society-oriented knowledge. Second, it presents respondents with a multiplicity of online news media sources to see which, if any, they have used to gather news. There are important shortcomings to these data that are worth highlighting. ANES data on media consumption is based entirely on self-reporting. To be sure, self-reported data is fairly common in analyses of media consumption and political knowledge—but the fact

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<sup>3</sup> Information on the ANES' response rates and sampling procedures is publicly available and can be found at <https://electionstudies.org/project/2016-time-series-study/>

that the strategy is common does not absolve it of its faults. Additionally, the cross-sectional design substantially diminishes the strength of any possible causal claims. Although my ability to make causal claims is bolstered by my use of propensity score matching, Mahalanobis distance matching, and inverse probability of treatment weighting to construct counter-factuals (described in more depth below), it does not reach the lauded “gold standard” of causal inference. However, practically speaking, illustrating the presence of an association is a necessary step in justifying more elaborate (and more expensive) research designs geared towards causal inference. Future research employing a panel design will be necessary to fill in this critical gap. Full question wording for the items employed is available in the appendix.

I operationalize my dependent variables (amount of process-oriented knowledge possessed and amount of society-oriented knowledge possessed) as additive indices. This means that I am, in effect, counting the number of answers respondents have gotten correct. Subsequently, I use Poisson regression with heteroskedastic robust standard errors to test hypotheses H1a, H2a, H3a and H3b. For H1a and H2a, I test if consuming news from foxnews.com (and other news sources, described below) is significantly associated with process and society-oriented knowledge. The coefficients generated from these are then compared using a Wald  $\chi^2$  test to test hypotheses H1b and H2b. For H3a and H3b, I interact whether respondents consume news from foxnews.com with the total number of online news sources respondents indicated visiting. A test for overdispersion supports the use of Poisson over negative binomial regression in both cases ( $\chi^2_{\text{cultural}} = -0.028, p = 0.5$ ;  $\chi^2_{\text{process}} = -0.029, p = 0.5$ ). Instances when the respondent did not want to answer are coded as missing and summarily dropped from the regressions.

### **Process-Oriented Knowledge**

Process-oriented knowledge is measured by the number of correct answers respondents gave to 10 questions that represented facts related to the political system—i.e., what office named individuals

hold, what the term limits for U.S. senators are, what party controls the House/Senate, and longstanding budgetary priorities. Correct answers are coded as 1 and aggregated into an additive index (Cronbach's  $\alpha = 0.70$ ). The number of questions respondents in the sample answered correctly ranged from 0 to 10 with a mean 5.638.

### **Society-Oriented Knowledge**

Society-oriented knowledge is measured by the number of correct answers respondents gave to nine questions that represented facts related to the U.S. on a social level. These include questions on climate change, the state of the economy compared to 2008, if the income-gap is larger today than in the past, and if President Obama is a Muslim (Cronbach's  $\alpha = 0.63$ ). As a proportion, respondents got more society-oriented questions correct than process-oriented ones. The number respondents got correct ranged from 0 to 9 with a mean of 6.152.

While the Cronbach  $\alpha$  values for both this and the process-oriented scales are not spectacular, they are comparable to those found in other knowledge batteries—see, as examples, Burns, Schlozman, and Verba (2001), Mondak (2001), Dassonneville and McAllister (2018), and (Miller 2018).

### **Media Consumption**

The 2016 ANES contained a wide array of possible online news sources that respondents could indicate visiting. These were ABC, BBC, Business Insider, BuzzFeed, CBS, CNN, The Daily Mail, The Guardian, Fox, Huffington Post, NBC, New York Times, USA Today, Washington Post, and Yahoo News, and “Other.” These sources were presented in a random order to the respondents—except “other,” which always remained last. The null category concerns respondents not using online sources for news. For entities with a multimedia presence, the wording of the instrument made clear that the interviewers were specifically interested if people had viewed the *web* version of these organizations (“Which of the following websites do you visit regularly? Please check any that you visit at least once a month.”). Responses were coded as dummy variables with visiting a site assigned as 1 and not visiting

it assigned as 0. Respondents reported visiting an average of 1.4 sources, with a minimum of zero visited and a maximum of 15 visited.

### **Control Variables**

In addition to these variables, I use a number of demographic controls including age, gender (1=female), education, party ID, political ideology, self-reported vote choice in 2012 (1 = GOP candidate Mitt Romney), and a series of racial dummy variables (White, Black, Asian, Native American or Alaskan Native, or Hispanic; Other as the omitted category). In conjunction, I include a dummy variable if the respondent was part of the web or face-to-face response groups<sup>4</sup>, a measure of respondents' interest in politics (a Likert-like scale ranging from 1 to 4: "Very interested"; "Somewhat interested"; "Not very interested"; "Not at all interested"), and a feeling thermometer for "conservatives" (1-100, with 1-50 indicating coldness and 50-100 indicating warmth) which is used as a proxy for conservative-group affinity (Mason 2018). This last control is particularly important as it reduces both the bias introduced from conservatives selecting foxnews.com to reinforce group identity as well as the bias introduced from conservatives providing expressive answers as opposed to knowledge-based answers. Because consumption of other conservative entertainment sources may predispose people towards visiting foxnews.com and affect people's political knowledge, I include a variable counting the number conservative entertainment programs respondents reported consuming (at least of those included in the ANES). There were a maximum of 10 such programs that respondents could claim to have viewed/listened to: The Kelly File, Hannity (cable and radio), The O'Reilly Factor, Rush Limbaugh, Glenn Beck, Savage Nation, the Hugh Hewitt Show, the Schnitt Show, and the Mark Levin Show<sup>5</sup>.

### **[Table 1 About Here]**

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4 All ANES surveys since 2012 contain both a web and face-to-face sample. See the ANES' publicly available methodology report for additional information.

5 The fact that these programs are news-based entertainment and not *news* means that it is not possible to use currently available data to expand the investigation into Fox's cable and radio news content.

## Robustness Check: Matching Analyses

One obvious concern with my investigation strategy is self-selection. Aside from the concerns of concerted misreported mentioned above, it is possible that answers will be biased due to differences in how different partisan groups fundamentally perceive the world. For example, Republicans are less likely to believe in anthropogenic climate change and less likely to feel that income inequality is a pressing national issue. Since people have a general propensity to seek out information that confirms their prior beliefs (Iyengar et al., 2015; Knobloch-Westerwick, Johnson, and Westerwick, 2015; Kunda, 1990; Nickerson, 1998; Westen, 2007), and since Republican consumers of the news tend to strongly prefer Fox over other alternatives (Iyengar and Hahn, 2009), it is possible that visiting foxnews.com is merely another, albeit noisier, proxy for party ID. In order for my hypotheses to be correct, I would need to show that visiting foxnews.com has a deleterious effect on political knowledge while accounting for the factors that lead people to visit the site.

One way to investigate if this is the case is to deploy form of matching. There are a number of matching algorithms used by social scientists. Three of the most common are Propensity Score Matching (PSM) (Rosenbaum and Rubin, 1983), Inverse Probability of Treatment Weighting (IPTW) (Rosenbaum, 1987), and Mahalanobis Distance Matching (MDM)<sup>6</sup> (Rubin, 1980). In brief, all three metrics aim to reduce the degree of “imbalance” found in non-randomly assigned treatments to approximate conditions found in experiments. In PSM, a series of variables expected to influence the assignment of the “treatment” (in this case, visiting foxnews.com) is identified from the dataset. Using a regression model, a score that represents the probability of being assigned to a treatment group is calculated. Individuals in the treated and untreated groups are then matched on the basis of this score and compared. IPTW takes this a step further and weights regression analyses on the basis of the propensity score and whether the respondents were treated. In MDM, pairs of treated and untreated

<sup>6</sup> I also attempted coarsened exact matching as well (CEM) (Iacus, King, and Porro, 2009). However, there were too many variables to match on (and too few observations) for a match to occur that improved upon the balance in the data.

individuals are matched by proximity to one another in N-dimensional space, where N is the number of covariates used to perform the matching (i.e., minimizing the Mahalanobis distance metric). There is controversy over the appropriate circumstances to use these measures, especially PSM specifically (King and Nielsen 2019). However, all are routinely used in the social science literature when attempting to estimate causal effects from observational data. Because this paper's intent is not to litigate this debate or play a part in it, I opt to present the results from all three of these metrics.

To be clear, while matching may reduce self-selection concerns, it does not fully rule out issues of endogeneity (Rosenbaum and Rubin 1983). The value gained from including the matching procedures is not that it somehow makes the statistical results immune to criticism. It is that it provides a separate test of the effect of my main hypotheses—one that does not try to hone in on the effect through the introduction of controls but by seeing whether the effect persists when directly comparing people who are equally likely to receive the treatment. In short, the value is in checking if the effect is robust to a separate, but related, approach to inquiry.

I use the `psmatch2` package in Stata 13 (Leuven and Sianesi, 2003) for the above-mentioned procedures. I use all of the controls when calculating the propensity score and Mahalanobis distance metric. I then use Poisson regression on the matched samples (and for the implementation of IPTW) to estimate the average treatment effect on the treated (ATT). That is, the effect of visiting foxnews.com on process- and society-oriented knowledge on those who actually visited the site. Figure 1 shows the degree of balance achieved on these variables between the treated and control groups for PSM and MDM. The bias between them is not statistically significant for any of these variables, suggesting an accurate estimation of the ATT.

**[Table 2 About Here]**

## **Results**



Since this paper is concerned with the effects of particular news sites and not the controls *per se*, for the sake of space and narrative flow I report only the incident rate ratios (IRRs) and standard errors concerned with news media sources. A statistically significant IRR above 1.0 means that a positive change in the independent variable<sup>7</sup> translates to an increase in the number of expected correct answers. Specifically, an increase of  $(\beta_{IRR} - 1) \times 100$  percent, where  $\beta_{IRR}$  is the IRR coefficient. Similarly, a statistically significant IRR below 1.0 signifies a decrease in the number of expected correct answers. The models presented contain all of the statistical controls discussed above. Full models are reported in the appendix.

### **The Effects of Foxnews.com on Political Knowledge**

Looking first at process-oriented knowledge, visiting foxnews.com is not significantly associated with changes in the amount of knowledge possessed ( $p = 0.731$ ). There were, however, a number of other news sources with statistically significant coefficients, all in the positive direction: CNN ( $\beta_{IRR} = 1.049$ ;  $p = 0.004$ ), The New York Times ( $\beta_{IRR} = 1.043$ ;  $p = 0.018$ ), The Washington Post ( $\beta_{IRR} = 1.047$ ;  $p = 0.019$ ), and the BBC ( $\beta_{IRR} = 1.086$ ;  $p < 0.000$ ). These sources were associated with an additional 4.9, 4.3, 4.7, and 8.6 percent increase in the number of correct process-oriented questions, respectively. In any event, visiting foxnews.com was not significantly associated with changes in the amount of knowledge expressed by visitors. Because the null category is “no usage of internet news sources,” this means that the effect of visiting the site is compared to receiving online news at all is null.

This relationship is reaffirmed when investigating the average marginal effect that visiting the sites have on process related knowledge (Figure 1). The average marginal effect of foxnews.com is estimated as an additional 0.03 correct answers, but the effect is not statistically distinguishable from zero. The average marginal effect of visiting the websites of CNN, The New York Times, The

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<sup>7</sup> Here, the difference between using and not using a source (0 to 1).

Washington Post, and the BBC, however, are estimated at 0.27, 0.24, 0.27, and 0.48 additional correct answers.

**[Figure 1 About Here]**

The overlapping error bars in the top half of Figure 1 foreshadow the results of the Wald  $\chi^2$  test, seen in Table 4. Of the 14 sources of web-based news foxnews.com was compared to, the differences between were only significantly different when considering the BBC. Thus I cannot reject the null hypothesis that the effects of Fox are different compared to the other online news sources for the vast majority (92 percent) of sources. It cannot be said that Fox delivers substantially different effects on process-oriented political knowledge compared to the majority of other online news organizations.

**[Table 3 About Here]**

While it does not appear that Fox is associated with a difference in process-related knowledge, the evidence *is* consistent with an effect on society-oriented knowledge. In this regard, visiting foxnews.com is not only significantly associated with a difference in knowledge compared to those who do not use the internet for news sources ( $\beta_{IRR} = 0.952$ ;  $p = 0.004$ ), it is significantly associated with a *decrease* in the number of questions answered correctly. Visiting the site is associated with an estimated decrease in the number of right answers of 4.8 percent. Indeed, Fox is only one of three sources associated with any significant differences in the number of correct answers, the other two being the BBC ( $\beta_{IRR} = 1.036$ ;  $p = 0.013$ ) and ABC<sup>8</sup> ( $\beta_{IRR} = 0.959$ ;  $p = 0.028$ ). As seen with the predicted average marginal effects in the bottom half of Figure 1, visiting foxnews.com is estimated to have a significant negative effect on the number of questions respondents answered correctly. The predicted average marginal effect is -0.353, meaning that respondents who visit foxnews.com answer just under a third an additional question incorrect on average ( $p < 0.000$ ).

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8 While the negative coefficient associated with visiting ABC's website is interesting—especially considering that it is not frequently suggested as carrying any pernicious effects—the relationship is not robust across different model specifications including, as will shortly be discussed, different approaches to the dependent variable.

**[Table 4 About Here]**

The fact that Fox is one of only two sources producing a negative effect intuitively suggests that it is significantly different compared to most of the other news sources. This is perhaps one of those rare instances where intuitions and statistical outcomes actually match up. As the results of the Wald  $\chi^2$  test demonstrate, foxnews.com is significantly different than 13 of the 14 news sources at levels under the 5-percent confidence threshold. While it may be a tad overdramatic to say that foxnews.com is *uniquely* negative, it appears that visiting foxnews.com is not only estimated to reduce one's society-based knowledge, and that the effects of doing so are significantly distinct than the preponderance (93 percent) of other online news sources.

**[Table 5 About Here]**

As mentioned previously, these results are estimated with the conservative feeling thermometer as a control—meaning that this finding cannot simply be dismissed as merely being the result of expressive reporting. However, foxnews.com writers and columnists are atypically sympathetic to some of the false positions captured by the society oriented knowledge: Namely whether global warming exists, if global warming is caused by human activity, and if President Obama is a Muslim. Further, these questions are so polarized that some may be justly concerned that controlling for conservative group identity is not enough to rule out that people are merely responding in a way to affirm their partisan in-group membership.

As a robustness check, I construct an additional society-oriented knowledge measure comprised of only the economic-based questions (If the income gap is larger today than 20 years prior, if unemployment is better or worse than last year, if the economy is better or worse than last year, if the nation's economy is doing better than in 2008, if economic mobility has decreased over the past 20 years, and the current unemployment rate). Unlike climate change (which has been publicly contorted into a debate between two coequal sides) and the former President's faith (which has been the subject

of wide-reaching conspiracy theories and, consequently, partisan reasoning), it is difficult to argue that an honest appraisal of the evidence could lead people to anything other than one answer to the questions on this scale. The mean number of answers correct is 4.25 with the minimum and maximum number correct being zero and six (Cronbach's  $\alpha = 0.53$ ). As can be seen in Figure 2, consuming information from foxnews.com is still negatively associated with society-oriented knowledge ( $\beta_{IRR} = 0.963$ ;  $p = 0.037$ ). The estimated average marginal effect associated with visiting the site translates to 0.16 fewer correct answers. In this case, the effects associated with foxnews.com are the only ones that are negative and statistically significant in this reduced model. Further investigations employing a similarly specified logistic regression model (not shown) suggests that visitors to ABC were statistically less likely to correctly answer that former President Obama is not a Muslim. This finding explains why it enjoyed a significant relationship in the previous model but not when considering a constrained society-oriented knowledge scale where this item is excluded. It is unclear at present, however, why visitors to the site would be significantly less likely to get that particular item correct. The full results of this reduced model are available in the appendix.

**[Figure 2 About Here]**

### **The Number of Total Sources Consumed as a Moderator**

Turning now to  $H_3$ , is the effect associated with visiting foxnews.com moderated by the total number of sources respondents viewed? Table 6 display the results of the two models interacting Fox and the number of sources respondents consulted. The effect associated with using Fox as one's sole news source for process-related knowledge is not statistically distinct from relying on any other sole provider ( $\beta_{IRR} = 1.03$ ;  $p = 0.231$ ). As before, even if it was statistically significant, it is estimated to have a positive impact on respondents' process-related knowledge. This was virtually the exact

opposite for society-based knowledge. Relying on Fox alone was associated with a statistically significant 9.5 percent decrease in society-based knowledge compared to those who relied on some other singular source ( $\beta_{IRR} = 0.905$ ;  $p < 0.000$ ).

**[Insert Table 4 About Here]**

Figure 4 provides a way of understanding the significant interaction effects present in the model. A word of caution when interpreting the average marginal effects: Only about 4.5 percent of respondents reported visiting more than six total news sources. Estimates beyond that range are bound to be very imprecise, especially considering that the mean of this scale is 1.46 and that 77 percent of the sample viewed no more than two online news sources. For most people, including foxnews.com in their online news diet is not associated with any significant differences in the process-oriented knowledge. Those at the extreme end of the spectrum who consume news from foxnews.com are estimated to have slightly higher levels of process-oriented knowledge than non-consumers, but the low numbers urge caution at these extremes. In the case of society-oriented knowledge however, those who only ingested one online source—and made Fox that source—were associated with significantly and substantively fewer society-oriented questions (1.3 questions;  $p < 0.000$ ) than those who used another sole source. Although Fox consumers who visited other sites appear to get significantly more knowledge as the number of additional sites increases, the gap between those who visit foxnews.com and those who did not remained significant for all but 0.45 percent of the sample. Again, caution is urged when considering values with a substantively small number of cases (e.g., six or more sources).

**[Insert Figure 3 About Here]**

**Propensity Score Matching**

These findings so far strongly suggest that visiting foxnews.com does not have a significant effect on process-oriented knowledge but does have a strong, negative effect on society-oriented knowledge. However, as mentioned above, these results are not able to obviate concerns over selection

effects. I address this concern through PSM, IPTW, and MDM, which gives greater license to engage in counterfactual reasoning by comparing the effects between people who did and did not visit foxnews.com, but were just as likely to.

Figure 4 shows the estimated ATT for both kinds of political knowledge. As with the regressions above, it is estimated that those visiting foxnews.com will actually answer slightly more process-oriented knowledge questions correctly. However, these estimates are small and statistically insignificant. When it came to society-oriented knowledge, though, all three methods reported an estimated negative effect of visiting foxnews.com and two of the three methods (IPTW and MDM) achieved statistical significance. Indeed, all three measures arrived at fairly consistent estimations of the ATT at roughly an additional one-quarter question answered incorrectly. This suggests that it is not simply the case that people with low levels of society-oriented knowledge are self-selecting into visiting foxnews.com. Rather, visiting the site is associated with a negative effect—even when taking self-selection into account.

**[Figure 4 about here]**

## **Discussion**

What do these results say about the presence of a Fox News effect? First, we must keep in mind that these data do not cover all of its multimedia outlets; the conclusions are necessarily limited just to affects associated with its web content. If we take the effect as influencing how much people know about politics from a more procedural stand-point, then the relationships in these data do not support the claim. There was no statistically significant difference imparted from visiting foxnews.com compared to those who did not use the internet for their news at all or compared to consumers of other news sources. Indeed, this largely remained true regardless of how many additional sources one consumed in addition to Fox—although visitors to the site who engaged with the most news sources

were estimated to have less knowledge than those who did not visit the site. However, the low number of people at these levels of news consumption impress caution against putting too much weight on these invariably imprecise measures. This comports with Delli Carpini and Keeter (1996) who find that media effects are weakest on items pertaining to the political process. But it also runs contrary to the meme of the Fox News effect. When it comes to knowing how to engage with politics, the network's online consumers seem no more ignorant than those of other major news sites.

When it comes to society-oriented knowledge, however, the weight of all the evidence gathered here is strongly suggestive of a negatively association between foxnews.com consumption and levels of political knowledge. It is estimated that visiting the site lowers the number of correct answers by roughly a third (0.353) a question on average. This effect is significantly distinct compared to all but two one news sources (ABC and Business insider). Substantively similar results arise when constraining the society-oriented questions to focus on purely economic issues. Further, using Fox as one's sole internet source was associated with a drop of roughly 1 out of 6 questions compared to those who used only one source that was not Fox. And although Fox consumers were significantly likely to answer more items correct as they ingested more sources, they also knew significantly less than the vast majority of respondents who visited comparable numbers of sites but did not go to Fox. These results are found even with the inclusion of numerous statistical controls, including age, sex, race, income, education, ideology, party ID, political interest, and conservative in-group affinity. They are also in a robustness check using a reduced society-knowledge scale that removes items that could be considered mere partisan cues—as well as in two of the three matching procedures I use to ameliorate concerns over self-selection. This latter fact suggests that, even for Republicans and conservatives who are the most likely to visit the site *ex ante*, visiting foxnews.com is deleterious to their levels of society-oriented political knowledge.

What is driving these differences in society-oriented knowledge? Any definitive answer will need to await further testing, but there are a few possibilities. The first is the most strongly associated with the spirit of the effect: That the differences emerge as a direct consequence of the content foxnews.com is publishing. For example, the lack of belief in climate change could be exacerbated by the skepticism of the analyses and opinion pieces on the site. Many contributors express doubt in anthropogenic climate change (Anderson, 2016). Others suggest that the economic recovery had been less-than-stellar during the Obama administration (Morici, 2016). Exposure to these arguments could cause readers to believe (erroneously) that the Earth is not warming and that the economy has not improved on virtually all conceivable metrics compared to 2008<sup>9</sup>.

It is also possible that the associations are less about what is explicitly said than what is unsaid. Very little was discussed about the wealth gap in 2016—except in the context of how the one between White and Black Americans have grown (Morici, 2016). And although I have yet to come across a story or piece from foxnews.com *circa* 2016 that suggests that President Obama is, in fact, a Muslim, there also do not appear to be any pieces that explicitly repudiate that notion—despite it being a prevalent belief among Republicans at the time (Fisher, 2015).

While these are (I hope) plausible mechanisms for the consistent and robust associations of foxnews.com with society-oriented knowledge, I leave investigations into their empirical veracity for later work.

Future research may also want to investigate these effects in the broader online information environment found in the present context. While the average respondent only viewed 1.4 news sources and only 15 percent of the sample indicated visiting foxnews.com, official websites are not the sole way that people can engage with digital news outlets. Social media is increasingly taking up a larger share of the American news media diet. At present, it is unclear how much both of these figures (the

<sup>9</sup> The one notable economic metric that is arguably worse from 2008 to 2016 is labor force participation, which has decreased substantially over the eight year span.



percent who visited foxnews.com and the number online sources people ingest) are being depressed by people eschewing news sites over content provided by social media. If social media is in fact eating into the site's web traffic, it is a trend that does not appear to be going away soon. As noted earlier, recent work has suggested that Americans under the age of 50 are more inclined to get their news from the internet as opposed to television. For adults between the ages of 30 and 50, this means going to news websites. For adults under 30, it more frequently means social media (Shearer, 2018). This is not merely a transplant of information from one context to another; there are differences in how news is navigated on dedicated sites versus on social media. On the one hand, this may diminish any effects that Fox (or any other news site) has on most consumers' knowledge since increased social media activity is associated with more cross-cutting information (Choi and Lee, 2015; Min and Wohn, 2018). Indeed, I found that additional online sources of information decreased the estimated effect of visiting foxnews.com on society-oriented knowledge. On the other hand, effects may be greater for other users due to the fact that they can curate their feed. People will presumably already be inclined towards Fox's content since they went out of their way to "follow" or "like" it. While the same could be said for news sites, social media services algorithmically serve their content in a way that maximizes engagement with the platform—often leading to users being exposed to emotionally charged posts. News stories with emotional frames affect how readers process the information they contain (Kühne and Schemer, 2013). While my research cannot isolate the role that emotions play in the effects I observe, it is plausible that increased exposure to emotionally charged pieces could affect how much society-oriented knowledge one has. Future research is necessary to investigate the way that social media can moderate the effects I find here, keeping an eye towards what sorts of users will be more/less effected and why.

I would be remiss to not also discuss some of the issues intrinsic to this research strategy. For one, going to foxnews.com (or any other news site) was ascertained through self reported data. While

self-reported data are necessarily common in studies of media effects, commonness does not absolve such data of their flaws. Future investigations can ameliorate this concern through the use of lab and/or survey experiments. Further, because the data I use in this investigation are cross-sectional, it is possible that the effect is driven by long-standing relationships between party-ID, ideology, and the concepts contained in the knowledge scales. While the evidence accrued from the matching procedures substantially reduces the concern that this relationship is solely driven by self-selection, they do not fully eliminate any and all possible endogeneity issues. Multiple regression is not magic; nor is matching, for that matter.

While this is a valid concern, I believe that the evidence presented here is worth considering for a few reasons. First, the effects are consistent across different approaches to the data (e.g., different modeling choices, keeping/removing problematic variables from the knowledge scale, and pursuing a regression versus matching approach) and with the inclusion of numerous controls. This suggests a certain degree of robustness to the relationship, making it worth disseminating to the broader social scientific community so it can be considered further. Second, just because endogeneity could still be affecting the size and strength of the estimate, it does not mean that the effect of foxnews.com will be zero. As Bennet and Iyengar (2008) suggest, the increased ability for consumers to actively curate the sources they ingest substantially diminishes the size of direct media effects. *Diminishes* but, importantly, not *eliminates*. It is still quite possible for media to impart effects onto their viewers; I argue that, given the evidence presented here, we ought to be open to the idea of a foxnews.com effect on society-oriented knowledge. Third, presenting these results (given the previous two considerations) enables future researchers to pursue this question more fully than I am currently equipped to here. These results can inform the design and expectations of future investigations employing more intensive (and, more pragmatically, *expensive*) designs. My earnest hope is that this article will inspire additional

investigations (i.e., those using experimental and longitudinal data) that will provide more precise estimates of the effect of foxnews.com on process-oriented and society-oriented knowledge.

While these are pressing concerns, it is important to remember that social science hardly ever moves forward in massive leaps and bounds. Our knowledge instead prefers to advance in cautious baby steps. Such advancement was made here. Prior to this work, with the aforementioned notable exception of Schroeder and Stone (2015), the claims that Fox News lowered political knowledge suffered from a lack of statistical controls and in largely limiting the kinds of knowledge investigated to current events and conspiracies. In addition to including important demographic controls, this research expands the definition of knowledge used when investigating this phenomenon to include 1) things helpful to successfully navigating the American political system; and 2) other politically relevant beliefs that shape how people interact with politics more broadly. Far from the popularized belief of Fox News content being uniquely and irrefutably injurious, this paper suggests that negative effects are indeed present but not universal across all domains of knowledge. There is much left to investigate regarding the effects of the nation's most mainstream source of conservative news on American politics—and that includes its effects on political knowledge.

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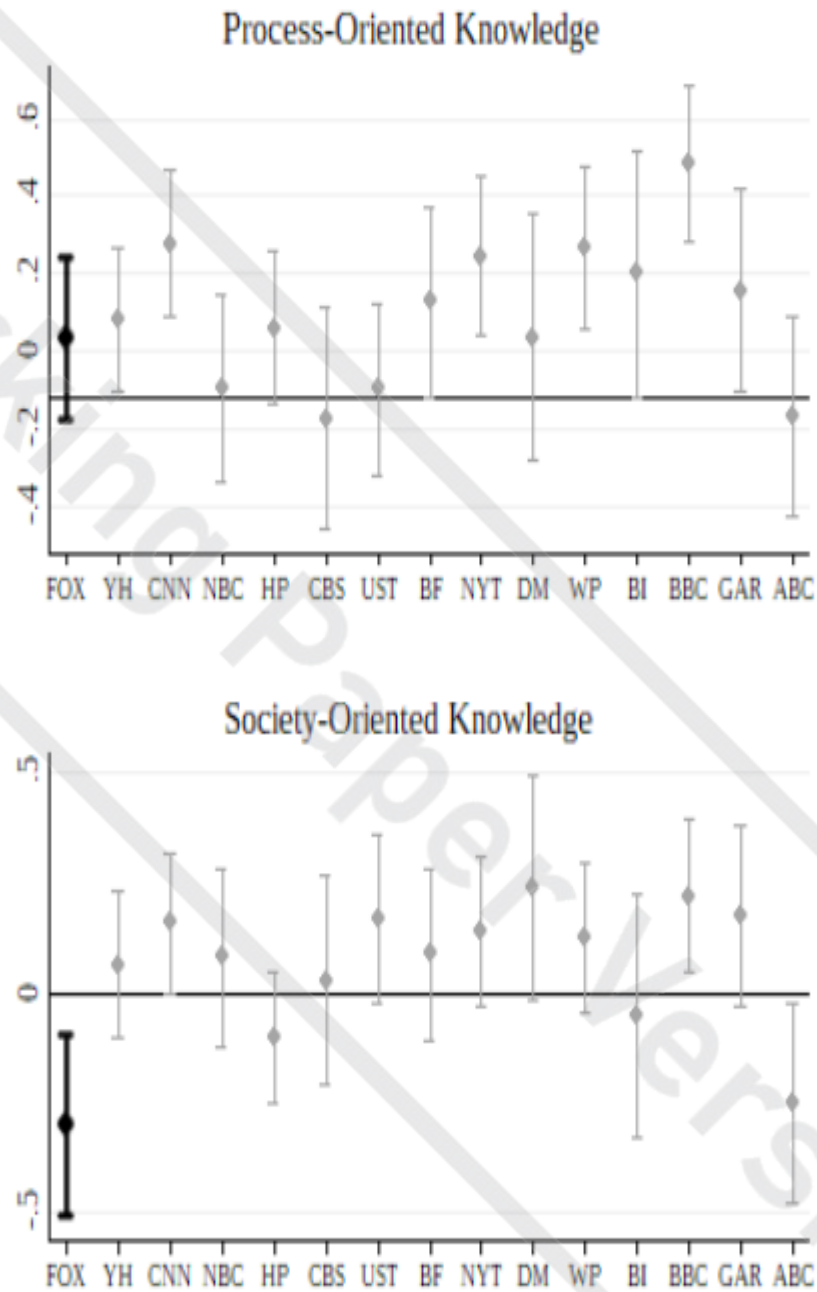
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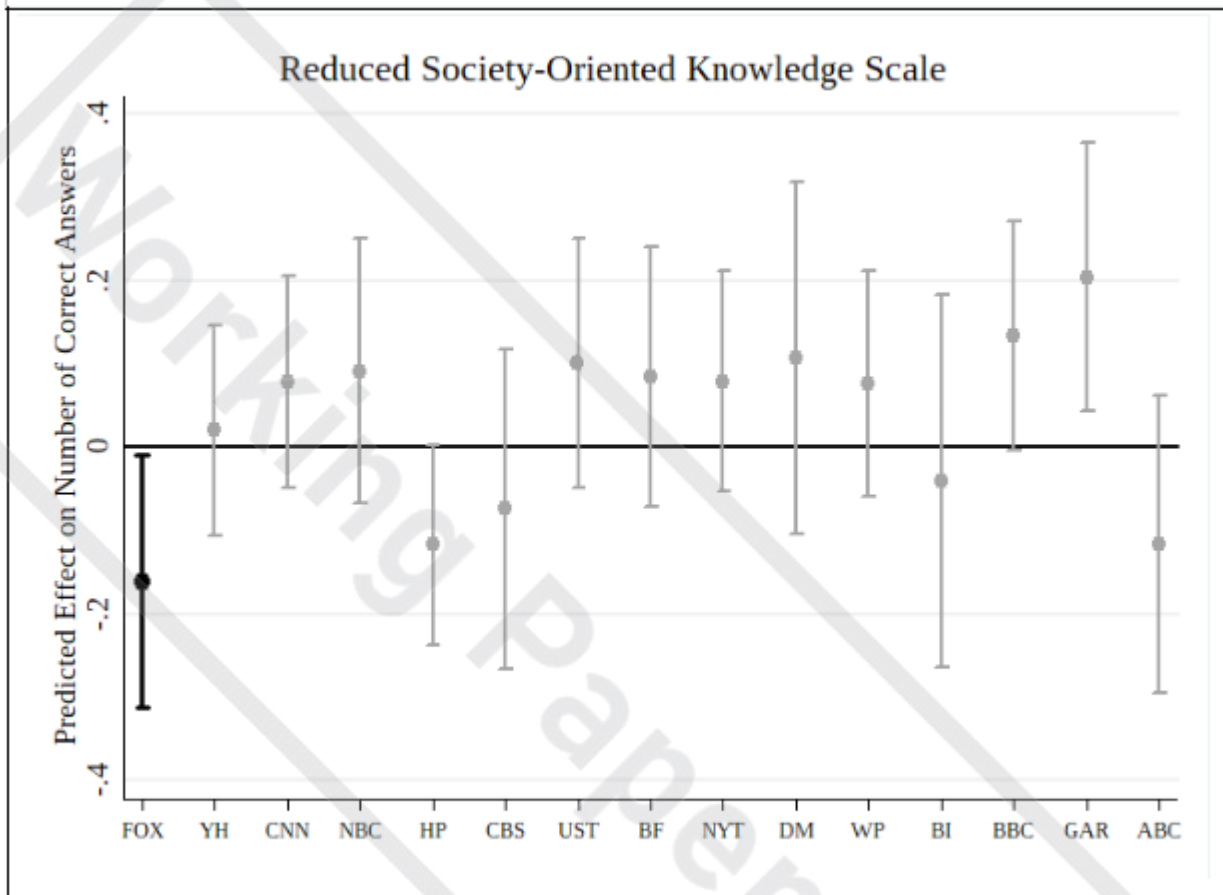


Figure 1: Predicted Effects of news source usage on process and society-oriented questions.



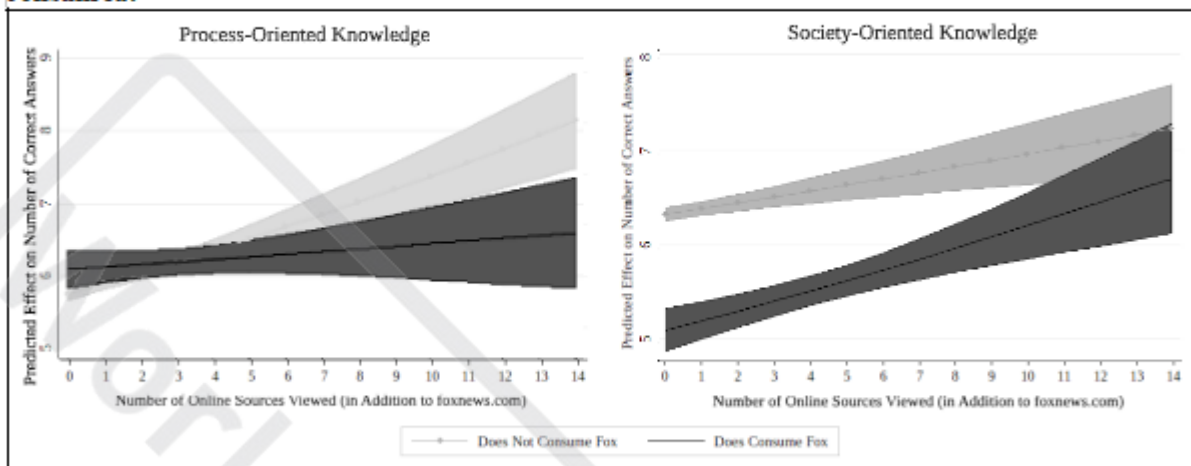
Notes: Average Marginal Effects plotted. Heteroskedastic-robust standard errors used. 0 is null effect and error bars are 95% confidence intervals.

Figure 2: Predicted Effects of news source usage on reduced society-oriented scale.



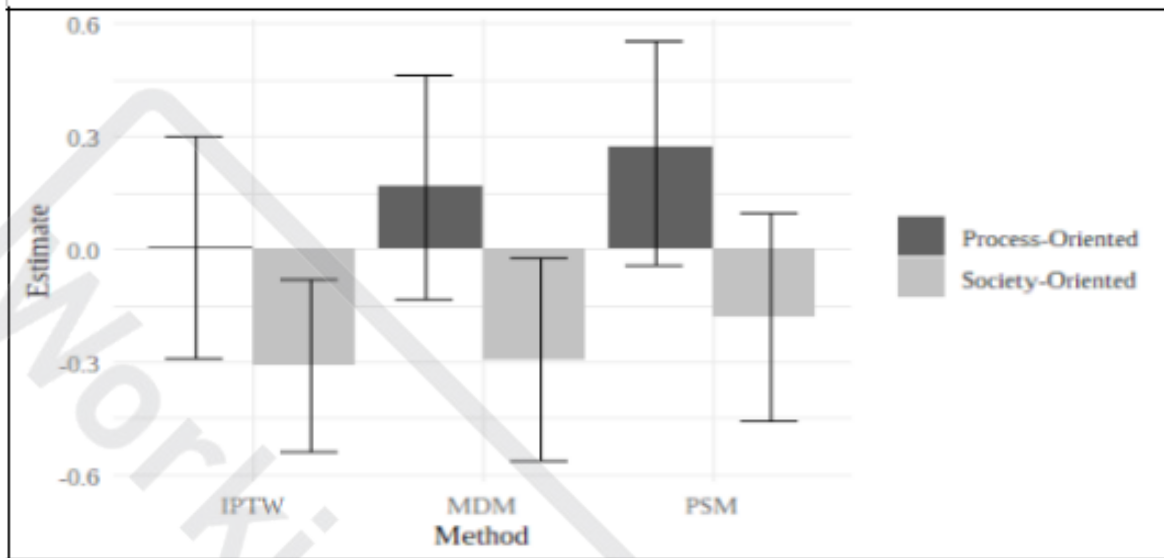
Notes: Average Marginal Effects plotted. Heteroskedastic-robust standard errors used. 0 is null effect and error bars are 95% confidence intervals.

**Figure 3: Effects of Fox consumption as moderated by the total number of online sources consumed.**



Notes: Average Marginal Effects plotted. Heteroskedastic-robust standard errors used. Error bars are 95% confidence intervals.

Figure 4: Effects of visiting foxnews.com as estimated through matching and IPTW.



Notes: Average Marginal Effects plotted. Error bars are 95% confidence intervals.

**Table 1: Descriptive statistics**

VARIABLES	N	Mean	S.D.	Min	Max
<i>Dependent Measures</i>					
Process-Oriented Knowledge	3,459	5.638	2.411	0	10
Society-Oriented Knowledge	3,528	6.152	1.540	0	9
<i>News Sites</i>					
Fox	4,238	0.151	0.359	0	1
Yahoo	4,238	0.160	0.366	0	1
CNN	4,238	0.142	0.349	0	1
NBC	4,238	0.0894	0.285	0	1
Huffington Post	4,238	0.153	0.360	0	1
CBS	4,238	0.0861	0.281	0	1
USA Today	4,238	0.0970	0.296	0	1
Buzzfeed	4,238	0.0687	0.253	0	1
New York Times	4,238	0.119	0.324	0	1
Daily Mail	4,238	0.0314	0.174	0	1
Washington Post	4,238	0.102	0.303	0	1
Business Insider	4,238	0.0302	0.171	0	1
BBC	4,238	0.0861	0.281	0	1
The Gaurdian	4,238	0.0432	0.203	0	1
ABC	4,238	0.101	0.301	0	1
<i>Partisan Controls</i>					
Party ID	4,248	3.859	2.152	1	7
Ideology	3,304	4.176	1.598	1	7
Conservative Feeling Thermometer	3,595	56.18	24.93	0	100
Conservative Media Sources Ingested	4,176	0.539	1.322	0	9

Voted Romney 2012	4,211	0.301	0.459	0	1
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*Additional Controls*

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Age	4,150	49.58	17.58	18	90
Gender	4,230	0.528	0.499	0	1
Education	4,227	11.17	2.325	1	16
Income	4,069	15.39	8.080	1	28
Political nterest	3,639	2.143	0.855	1	4
Web	4,271	0.723	0.447	0	1
Number of News Sources	4,238	1.460	2.299	0	15

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**Table 2: Pre-matching balance and balance achieved with PSM and MDM**

Variable	Pre-Matching		Post-Matching (PSM)		Post-Matching (MDM)	
	<i>Treated</i>	<i>Control</i>	<i>Treated</i>	<i>Control</i>	<i>Treated</i>	<i>Control</i>
White	<b>0.7665</b>	<b>0.7090</b>	0.8018	0.7950	0.8018	0.8018
Black	<b>0.0721</b>	<b>0.0978</b>	0.0570	0.0592	0.0570	0.0570
Asian	0.0298	0.0353	0.0160	0.0182	0.0160	0.0160
Native	0.0031	0.0067	0.0023	0.0046	0.0023	0.0023
Hispani	0.0956	0.1082	0.0911	0.1002	0.0911	0.0911
Interest	<b>1.9604</b>	<b>2.1751</b>	1.8929	1.8519	1.8929	1.9066
Age	<b>47.1465</b>	<b>49.9966</b>	47.4400	47.2370	47.4400	48.2940
Gender	<b>0.4836</b>	<b>0.5366</b>	0.4488	0.4260	0.4488	0.4465
Education	<b>11.4306</b>	<b>11.1247</b>	11.7380	11.7590	11.7380	11.6770
Party ID	<b>4.9203</b>	<b>3.6710</b>	5.0569	4.9658	5.0569	4.8861
Income	<b>17.0435</b>	<b>15.0889</b>	17.7950	18.3940	17.7950	17.6700
Ideology	<b>4.8761</b>	<b>4.0355</b>	4.8292	4.7403	4.8292	4.7677
Web	<b>0.6963</b>	<b>0.7261</b>	0.6948	0.6993	0.6948	0.6970
Con. Feeling Thermometer	<b>65.7975</b>	<b>54.4736</b>	66.8700	66.6100	66.8700	65.4850
Conservative Media	<b>1.009</b>	<b>0.329</b>	1.1378	1.1734	1.1378	1.0238
Romney 2012	<b>0.2667</b>	<b>0.495</b>	0.5463	0.5321	0.5463	0.5392
Mean Bias	7.7 %		3.6%		3.0%	

Notes: Statistically significant differences in means between visiting foxnews.com (treated) and not (control) are bolded ( $p < 0.05$ ). Conservative media top-coded at 3 to ensure balance.

**Table 3: Effects of Online News Sources on Political Knowledge**

	<i>Dependent variable:</i>	
	Process-Oriented	Society-Oriented
	Fox News	1.006 (0.0183)
Yahoo	1.014 (0.0162)	1.010 (0.0139)
CNN	1.049** (0.0173)	1.026 (0.0138)
NBC	0.984 (0.0207)	1.013 (0.0173)
Huffington Post	1.010 (0.0172)	0.983 (0.0124)
CBS	0.971 (0.0240)	1.005 (0.0201)
USA Today	0.984 (0.0190)	1.027 (0.0164)
Buzzfeed	1.022 (0.0215)	1.014 (0.0163)
New York Times	1.043* (0.0187)	1.023 (0.0146)
Daily Mail	1.007 (0.0279)	1.040 (0.0223)
Washington Post	1.047* (0.0191)	1.021 (0.0146)
Business Insider	1.035 (0.0286)	0.992 (0.0227)
BBC	1.086*** (0.0189)	1.036* (0.0149)
The Gaurdian	1.028 (0.0234)	1.029 (0.0177)
ABC	0.972 (0.0219)	0.959* (0.0182)
Other Site	1.010 (0.0205)	0.977 (0.0167)



**Table 3: Continued**

	<i>Dependent variable</i>	
	Process-Oriented	Society-Oriented
Constant	3.191*** (0.201)	6.366*** (0.322)
Controls	Yes	Yes
Observations	2,520	2,520
Log Likelihood	-5,757.28	-5,155.28
Akaike Inf. Crit.	10,646.93	10,376.56

Notes: Poisson regression models; Mean VIF = 1.7; Incidence Rate Ratios reported for coefficients; News sources reported only, full results in the appendix; \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

**Table 4: Difference in effects between Fox and other online news sources on process-oriented knowledge.**

News Organization	Difference	$\chi^2$	Significance
Yahoo	0.01	0.10	0.75
CNN	0.04	2.60	0.11
NBC	-0.02	0.43	0.44
Huffington Post	0.00	0.03	0.86
CBS	-0.03	1.28	0.26
USA Today	-0.02	0.65	0.42
Buzzfeed	0.02	0.33	0.57
New York Times	0.04	2.06	0.13
Daily Mail	0.00	0.00	0.99
Washington Post	0.04	2.24	0.13
Business Insider	0.03	0.69	0.41
BBC	0.08	8.86	0.03
Guardian	0.02	0.49	0.48
ABC	-0.03	1.24	0.27

Notes: “Difference” is difference in Poisson regression coefficients (news source - Fox);  $\chi^2$  calculated with 2,505 degrees of freedom. Significant differences highlighted

**Table 5: Difference in effects between Fox and other online news sources on society-oriented knowledge**

News Organization	Difference	$\chi^2$	Significance
Yahoo	0.06	14.05	0.00
CNN	0.07	21.97	0.00
NBC	0.06	15.25	0.00
Huffington Post	0.03	9.05	0.03
CBS	0.05	9.28	0.02
USA Today	0.08	16.39	0.00
Buzzfeed	0.06	10.84	0.00
New York Times	0.07	22.82	0.00
Daily Mail	0.09	11.95	0.00
Washington Post	0.07	21.15	0.00
Business Insider	0.04	4.59	0.03
BBC	0.08	20.93	0.00
Guardian	0.08	16.68	0.00
ABC	0.01	1.79	0.18

Notes: “Difference” is difference in Poisson regression coefficients (news source - Fox);  $\chi^2$  calculated with 2,505 degrees of freedom. Significant differences highlighted

**Table 6: Effects of Fox as moderated by number of additional news sources used.**

	<i>Dependent Variable</i>	
	Process	Society
Fox	1.033 (0.0284)	0.905*** (0.0253)
Number of News Sources	1.025*** (0.00315)	1.010*** (0.00238)
Fox x News Sources	0.981** (0.00661)	1.010* (0.00592)
Constant	3.243*** (0.201)	4.872*** (0.284)
Controls	Yes	Yes
Observations	2,520	2,526
Log Likelihood	-5,299.25	-5,158.363
Akaike Inf. Crit.	10,638.51	10,356.73

Notes: Poisson regression models; Mean VIF = 1.99. Incidence Rate Ratios reported for coefficients. Fox consumption, number of sources, and their interaction reported only. Full results in the appendix; \* p<0.1; \*\* p<0.05; \*\*\* p<0.01

## Appendix 2

In this appendix, I present the fully specified models used in Table 2 and used to generate the predicted marginal effects displayed in Figures 1 and 2 (Table A2.1) and Figure 3 (Table A2.1). Tables begin on the next page.

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**Table A2.1: Fully Specified Models for Figures 1 and 2**

	<i>Dependent variable:</i>		
	Process-Oriented	Society-Oriented	Restricted Process-Oriented
Fox News	1.006 (0.0183)	0.952** (0.0163)	0.963* (0.0174)
Yahoo	1.014 (0.0162)	1.010 (0.0139)	1.005 (0.0151)
CNN	1.049** (0.0173)	1.026 (0.0138)	1.018 (0.0153)
NBC	0.984 (0.0207)	1.013 (0.0173)	1.021 (0.0193)
Huffington Post	1.010 (0.0172)	0.983 (0.0124)	0.973 (0.0139)
CBS	0.971 (0.0240)	1.005 (0.0201)	0.983 (0.0223)
USA Today	0.984 (0.0190)	1.027 (0.0164)	1.024 (0.0182)
Buzzfeed	1.022 (0.0215)	1.014 (0.0163)	1.020 (0.0189)
New York Times	1.043* (0.0187)	1.023 (0.0146)	1.019 (0.0160)
Daily Mail	1.007 (0.0279)	1.040 (0.0223)	1.025 (0.0257)
Washington Post	1.047* (0.0191)	1.021 (0.0146)	1.018 (0.0163)
Business Insider	1.035 (0.0286)	0.992 (0.0227)	0.991 (0.0263)
BBC	1.086*** (0.0189)	1.036* (0.0149)	1.032 (0.0168)
The Gaurdian	1.028 (0.0234)	1.029 (0.0177)	1.049* (0.0201)
ABC	0.972 (0.0219)	0.959* (0.0182)	0.973 (0.0206)
Other	1.010 (0.0205)	0.978 (0.0167)	0.987 (0.0180)
Age	1.003***	1.000	1.001

	(0.000416)	(0.000327)	(0.000352)
Gender	0.931***	0.950***	0.942***
	(0.0116)	(0.00965)	(0.0105)
Education	1.038***	1.018***	1.015***
	(0.00338)	(0.00265)	(0.00285)
Party ID	0.987*	0.969***	0.971***
	(0.00518)	(0.00383)	(0.00417)
Income	1.009***	1.005***	1.004***
	(0.000922)	(0.000719)	(0.000785)
Ideology	0.996	0.975***	0.982***
	(0.00686)	(0.00490)	(0.00544)
White	1.007	1.038	1.041
	(0.0319)	(0.0293)	(0.0334)
Black	0.880**	1.052	1.046
	(0.0388)	(0.0331)	(0.0378)
Asian	0.998	1.012	1.004
	(0.0490)	(0.0394)	(0.0416)
Native	1.116	1.107	1.121
	(0.126)	(0.112)	(0.123)
Hispanic	0.910*	1.034	1.031
	(0.0364)	(0.0331)	(0.0369)
Interest	0.894***	0.988	0.988
	(0.00781)	(0.00660)	(0.00724)
Web	1.244***	1.058***	1.062***
	(0.0184)	(0.0124)	(0.0135)
Conservative Feeling Thermometer	1.000	0.999***	0.999**
	(0.000337)	(0.000254)	(0.000277)
Number of Conservative Media Sources Consumed	1.018***	0.969***	0.980***
	(0.00422)	(0.00547)	(0.00552)
Vote for Romney in 2012	1.086***	0.902***	0.914***
	(0.0214)	(0.000300)	(0.000343)
Constant	3.191***	6.366***	4.156***
	(0.201)	(0.322)	(0.233)

Observations	2,520	2,520	2,558
Log Likelihood	-5,757.28	-5,155.28	-4,668.41
Akaike Inf. Crit.	10,646.93	10,376.56	9,402.82

Notes: Poisson regression models; Mean VIF = 1.7; Incidence Rate Ratios reported for coefficients; \* p<0.05; \*\* p<0.01; \*\*\* p<0.001

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**Table A2.2 Fully Specified Models for Figure 3**

	<i>Dependent variable:</i>	
	Process-Oriented	Society-Oriented
Fox	1.033 (0.0284)	0.905*** (0.0253)
Number of News Sources	1.025*** (0.00315)	1.010*** (0.00238)
Fox x News Sources	0.981** (0.00573)	1.010* (0.00478)
Age	1.003*** (0.000404)	1.000 (0.000312)
Gender	0.924*** (0.0114)	0.948*** (0.00950)
Education	1.040*** (0.00338)	1.019*** (0.00262)
Party ID	0.988* (0.00519)	0.969*** (0.00381)
Income	1.009*** (0.000919)	1.005*** (0.000719)
Ideology	0.994 (0.00681)	0.975*** (0.00484)
White	1.003 (0.0309)	1.037 (0.0294)
Black	0.869** (0.0379)	1.049 (0.0331)
Asian	0.991 (0.0482)	1.010 (0.0392)
Native	1.124 (0.127)	1.105 (0.113)
Hispanic	0.906* (0.0358)	1.032 (0.0332)
Interest	0.892*** (0.00781)	0.986* (0.00656)
Web	1.237*** (0.0183)	1.056*** (0.0123)

Conservative Feeling Thermometer	1.000 (0.000337)	0.999*** (0.000255)
Number of Conservative Media Sources Consumed	1.018*** (0.00421)	0.969*** (0.00543)
Vote for Romney in 2012	1.087*** (0.0215)	0.903*** (0.0163)
Constant	3.243*** (0.201)	4.872*** (0.284)
Observations	2,520	2,526
Log Likelihood	-5,299.25	-5,158.363
Akaike Inf. Crit.	10,638.51	10,356.73

Note: Poisson regression models; Mean VIF = 2.0; Heteroskedastic robust standard errors; Incidence Rate Ratios reported. \* p<0.05; \*\* p<0.01; \*\*\*p<0.001

### Appendix 3

In this appendix, I provide the questions used to construct the process-oriented and society-oriented indices. For those items that are not predetermined to be correct by the ANES, bolded items were identified as correct and any respondent selecting that answer would be coded as 1. Missing answers were coded as such and dropped from the analysis. “Don’t know” responses were coded as zero. Other selections were coded as zero.

#### Process-Oriented Knowledge

On which of the following does the U.S. federal government currently spend the least?

1. **Foreign aid**
2. Medicare
3. National defense
4. Social Security

Do you happen to know which party currently has the most members in the U.S. House of Representatives in Washington?

1. Democrats
2. **Republicans**

Do you happen to know which party currently has the most members in the U.S. Senate?

1. Democrats
2. **Republicans**

Which is the party that is more conservative?

1. Democrats
2. **Republicans**

For how many years is a United States Senator elected that is, how many years are there in one full term of office for a U.S. Senator?

Subject Provided/Free Response (6)

Joe Biden: What job or political office does he now hold? (ANES Provided)

Paul Ryan. What job or political office does he now hold? (ANES Provided)

Angela Merkel What job or political office does she now hold? (ANES Provided)

Vladimir Putin What job or political office does he now hold? (ANES Provided)

John Roberts What job or political office does he now hold? (ANES Provided)

### **Society Oriented Knowledge**

Do you think the difference in incomes between rich people and poor people in the United States today is larger, smaller, or about the same as it was 20 years ago?

1. **Larger**
2. Smaller
3. About the Same

Would you say that over the past year, the level of unemployment in the country has gotten better, stayed about the same, or gotten worse?

1. **Better**
2. **About the Same**
3. Worse

You may have heard about the idea that the world's temperature may have been going up slowly over the past 100 years. What is your personal opinion on this? Do you think this has probably been happening, or do you think it probably hasn't been happening?

1. **Has probably been happening**
2. Probably hasn't been happening

Assuming it's happening do<sup>10</sup>, you think a rise in the world's temperatures would be caused mostly by human activity, mostly by natural causes, or about equally by human activity and by natural causes?

1. **Mostly by human activity**
2. Mostly by natural causes
3. About equally by human activity and natural causes

Would you say that compared to 2008, the nation's economy is now better, worse, or about the same?

1. **Better**
2. Worse
3. About the same

Is Barack Obama a Muslim, or is he not a Muslim?

1. Muslim
2. **Not a Muslim**

Thinking about the economy in the country as a whole, would you say that over the past year the nation's economy has gotten better, stayed about the same, or gotten worse?

1. Gotten better
2. **Stayed about the same**
3. Gotten worse

---

10 This was switched with the more simple "do you think a rise" if respondents affirmed global warming was probably happening.

When it comes to people trying to improve their financial well-being, do you think it is now easier, harder, or the same as it was 20 years ago?

1. Easier
2. **Harder**
3. The same

Has the 2010 health care law increased, decreased, or had no effect on the number of Americans with health insurance?

1. Increased
2. **Decreased**
3. Had no effect

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## Appendix 4

In this appendix, I investigate whether the answers to the society-oriented knowledge scale were substantially more difficult to answer for the average individual than those on the process-oriented knowledge scale. If they were, it is likely that correct answers would only be attained through partisan reasoning. Table A4.1 reports on the proportion of respondents who answered the question and got the answer correct on each question in the process-oriented scale. Table A4.2 looked at the proportion of respondents who answered each question in the society-oriented scale correctly. These results suggest that, if anything, the process-oriented scale was harder than the society-oriented scale. This substantially diminishes the concerns that only political sophisticates were answering these questions correctly.

**Table A4.1: Breakdown of proportion of correct answers per item on the process-oriented scale**

	Fed. Spend.	House Maj.	Senate Maj.	Sen. Length	Biden	Ryan	Merkel	Putin	Roberts	More Cons.
Prop. Correct	0.28	0.73	0.67	0.42	0.88	0.56	0.35	0.68	0.25	0.75
N cases	4150	4088	4082	4075	3649	3649	3649	3649	3649	3635

Note: Columns refer to specific questions in the process-oriented scale (see Appendix 3 for wording and responses).

**Table A4.1: Breakdown of proportion of correct answers per item on the society-oriented scale**

	knw22	Inc. Gap	Unemploy.	Clim. Chng.	Man Made	Econ. 2008	O. Muslim	E. Mobility	ACA
Prop. Correct	0.71	0.81	0.76	0.81	0.39	0.66	0.67	0.73	0.57
N cases	4265	4267	4265	4247	4250	4250	3588	3633	3607

Note: Columns refer to specific questions in the society-oriented scale (see Appendix 3 for wording and responses).